QLOGIC

Readme File

QLogic QLA2300/QLA2312 FCode

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1. File Contents

NOTE: This FCode is for PCI or cPCI (Compact PCI) HBA's only. 2300/2310 based HBAs must use `ifp2300.prom` file. 2312 based HBA's must use `ifp2312.prom` file. If the incorrect file is loaded, the adapter will not function properly.

The following table describes the files included with the FCode binary file.

File	Description
ifp2300.prom	FCode binary file for use with 2300/2310 based HBAs
ifp2312.prom	FCode binary file for use with 2312 based HBAs
readme.txt	FCode readme file
qla2x00flash	Solaris flash utility
Readme	Readme for qla2x00flash

2. OS Support

This driver has been tested with Solaris 6, 7, 8, and 9.

3. Supported Features

- 256 ID Support
- 256 LUN Support
- Fabric boot support
- Local loop boot support
- 1 or 2 Gigabit data rate support

4. Selecting a Device

NOTE: Please type `reset-all` at the ok prompt in the following cases: 1) If the Solaris has been shutdown to the ok prompt, before performing a `select-dev`, or 2) After performing a `select-dev`, before booting Solaris.

- To prevent an automatic boot of the system after typing `reset-all`, set the OBP environment variable `auto-boot?` to `false`:
  `ok setenv auto-boot? false <cr>`

- To scan for attached Fibre Channel devices:
  ```
  ok probe-scsi-all
  ```
  or

  At the ok prompt locate the QLogic device in device tree and select it.

  Example:
  ```
  ok show-devs
  .
  .
  .
  /pci@1f,0/pci@1/QLGC,qla@4
  .
  .
  ok " /pci@1f,0/pci@1/QLGC,qla@4" select-dev
  ok show-children
  ```
  Select a boot device and write down the WWPN, LoopId and Lun of the boot device.
- Save the boot device information to adapter NVRAM. If you have not already done so, you must select the device.

  Example:
  ```
  ok " /pci@1f,0/pci@1/QLGC,qla@4" select-dev
  ```
  Enter the WWPN, LoopId and Lun and type `set-boot-id`.

  Example:
  ```
  ok 2200002037009eeb 82 0 set-boot-id
  Calculating NVRAM checksum, please wait.... done
  Boot device login successful
  Boot WWN - 20000020 37009eeb WWPN - 22000020 37009eeb Id - 82 Lun - 0
  ok
  ```
  If the following message is printed, the boot device can't be logged in:
  ```
  Boot device login failed, check boot device settings
  Boot WWN - 20000020 37009eeb Id - 82 Lun - 0
  ```
  Please recheck the boot device settings and reenter them using the `set-boot-id` command.
- To verify boot device, type `show-boot-id`.

  Example:
  ```
  ok show-boot-id
  Boot WWN - 20000020 37009eeb WWPN - 22000020 37009eeb Id - 82 Lun - 0
  ok
  ```
- To boot device, type the complete boot path including Id and Lun. The Id and Lun must match those entered in step B.

  Example:
  ```
  ok boot /pci@1f,0/pci@1/QLGC,qla@4/sd@82,0
  ```
  NOTE: You must enter the `reset` command before attempting to boot if the boot was interrupted or any of the QLogic FCode commands were executed.
- To clear the boot device information from the NVRAM, type `clear-boot-id`.

  Example:
  ```
  ok clear-boot-id
  ```

5. Setting and Viewing Fibre Channel Connection Mode

- To view the current host adapter Fibre Channel connection mode, type `show-connection-mode`.

  Example:

```
ok show-connection-mode
Current HBA connection mode: 2 - Loop preferred, otherwise point-to-point
Possible connection mode choices:
0 - Loop Only
1 - Point-to-point only
2 - Loop preferred, otherwise point-to-point
```

- To change the current host adapter Fibre Channel connection mode, type `set-connection-mode`.

  Example:

```
ok 0 set-connection-mode
Calculating NVRAM checksum, please wait...
Current HBA connection mode: 0 - Loop Only
Possible connection mode choices:
0 - Loop Only
1 - Point-to-point only
2 - Loop preferred, otherwise point-to-point
```

6. Setting and Viewing Fibre Channel Data Rate

- To view the current host adapter Fibre Channel data rate, type `show-data-rate`.

  Example:

```
ok show-data-rate
Current HBA data rate: One Gigabit rate
Possible data rate choices:
0 - One Gigabit rate
1 - Two Gigabit rate
2 - Auto-negotiated rate
```

- To change the current host adapter Fibre Channel data rate, type `set-data-rate`.

  Example:

```
ok 1 set-data-rate
Calculating NVRAM checksum, please wait...
Current HBA data rate: Two Gigabit rate
Possible data rate choices:
0 - One Gigabit rate
1 - Two Gigabit rate
2 - Auto-negotiated rate
```

7. Setting and Viewing Adapter loopId

- To view the current host adapter loopId, type `show-adapter-loopid`.

  Example:
  ```
  ok show-adapter-loopid
  Adapter loopId - 7c
  ```

- To change the current host adapter loopid, type `set-adapter-loopid`.

  Example:
  ```
  ok 0 set-adapter-loopid
  Adapter loopid - 0
  ```

8. Setting the Viewing the BIOS Compatibility Mode Device Name

This parameter should not be changed unless the following has occurred:

- The adapter was shipped with PC BIOS code and Solaris device paths were created for the attached storage devices. Later the adapter was flashed with FCode causing a change in the device paths and mount point failures, etc.
- If the Solaris devices paths are created with BIOS on the adapter, the device paths contain `fibre-channel` as in the following example
  `/devices/pci@1f,0/pci@1/fibre-channel@4`
- If the adapter is subsequently flashed with FCode the device paths contain `QLGC,qla` as in the following example:
  `/devices/pci@1f,0/pci@1/QLGC,qla@4`

If you wish to access the device paths as created when BIOS was present on the adapter do the following:

1. Select the host adapter device you wish to change (see section 4-A).
   ```
   ok show-mode
   FCode compatibility mode - default setting
   ok 1 set-mode
   BIOS compatibility mode
   ok reset-all
   ```
2. Reboot and the device paths have `fibre-channel` in them.

9. Beacon Support

Beacon is a feature to allow a specific host adapter to be visually located easily. When the feature is activated, the green LED on the back of the adapter will flash at approximately one second intervals.

To enable the feature, select the host adapter device you wish to locate (see section 4-A):

```
ok beacon
```

The following message is displayed:

```
Flashing adapter green LED, type any character to quit
```

The green LED on the selected host adapter will flash until you type any character on the keyboard.

NOTE: For multi-channel host adapters, only one channel's LED will flash.

10. Self Test

To invoke a minimal self test, enter `test` at the ok prompt followed by the adapter device path as in the following example.

```
ok test /pci@1f,0/pci@5/QLGC,qla@0
```

11. Flashing Adapter with FCode

To update the FCode, use the QLogic qla2x00flash utility. A QLogic Solaris HBA driver revision 3.13 or later must be installed before this flash utility can be run.

To run the utility perform the following steps:

1. Copy the `qla2x00flash` file and `ifp2300.prom` file to desired directory.
2. Enter the command line with the appropriate path as in the example below.
   ```
   qla2x00flash -l /devices/pci@1f,0/pci@1/QLGC,qla@4:devctl ifp2300.prom
   ```
   or
   ```
   qla2x00flash -l /devices/pci@1f,0/pci@1/QLGC,qla@4:devctl ifp2312.prom
   ```

WARNING: EXTREME CARE MUST TO BE TAKEN WHEN CHANGING FLASH CONTENTS, INCORRECT DATA MAY RENDER THE ADAPTER UNUSABLE TO THE POINT THAT THE OPERATING SYSTEM MAY NO LONGER FUNCTION.

12. Building a Bootable Disk

This procedure assumes the system is already booted from an existing system disk, and that you have already performed a full system backup.

The device name shown in this example is for a device on the third PCI bus slot, target Id 130, Lun 0, slice 0. The device path is different on each system depending on which PCI bus slot, target Id, Lun, etc.

You must have already completed the steps listed above before attempting to create a bootable disk.

This procedure involves using the Solaris command, ufsdump to create temporary saveset files for each partition on your current boot disk. In order for this method to be successful, you must have enough extra disk space to create the saveset files or your Solaris machine must have a high capacity tape drive attached.

1. Determine the amount of disk space used/available on your current boot disk.
   Use the `/usr/bin/df -k -l` command for a listing.

Filesystem	kbytes	used	avail	capacity	Mounted on
/dev/dsk/ c0t0d0s0	2577118	1650245	875331	66%	/
/proc	0	0	0	0%	/proc
fd	0	0	0	0%	/dev/fd
mnttab	0	0	0	0%	/etc/mnttab
swap	1310480	0	1310480	0%	/var/run
swap	1311344	864	1310480	1%	/tmp
/dev/dsk/ c0t0d0s7	5135326	114	5083859	1%	/home

This df example shows that the current boot disk is /dev/dsk/c0t0d0s(x). There are two partitions of interest, slice 0 or "/" and slice 7 or "/home". Slice 0 is using 1.6GB and has 875MB free. Slice 7 uses 114KB and has 5GB free. Therefore, Slice 7 or "/home" can be used to store the temporary saveset files. If at least 1.7GB free was not available on this disk, a partition would have to be created on the new bootable disk large enough to hold the largest temporary saveset plus the largest used space on a partition. In this example, that would be a partition at least 3.2GB(1.6GB+1.6GB).

2. Use the format command to create, label, and format partitions on the new bootable disk. These partitions must be able to contain the contents of the temporary savesets. If you are not familiar with the format command, carefully read the Solaris documentation and manual pages for the command. Misuse of format could destroy the data on the current disk drives.

   Example:

   ```
   format
   partition
   print
   ```

Part	Tag	Flag	Cylinders	Size	Blocks	
0	root	wm	0 - 8738	4.00 GB	(8739/0/0)	8389440
1	swap	wu	8739 - 9188	210.94 MB	(450/0/0)	432000
2	backup	wu	0 - 9201	4.21 GB	(9202/0/0)	8833920
3	unassigned	wm	0	0	(0/0/0)	0
4	unassigned	wm	0	0	(0/0/0)	0
5	unassigned	wm	0	0	(0/0/0)	0
6	unassigned	wm	0	0	(0/0/0)	0
7	unassigned	wm	0	0	(0/0/0)	0

```
label
quit
quit
```

3. Use the newfs command to create the file system.

   Example:
   ```
   newfs -v /dev/rdsk/c3t130d0s0
   ```

   NOTE: The target device Id (t130) is in decimal! The hexadecimal value for the target Id is used in the boot command line shown in step 11.

4. Mount the boot partition to the /mnt mount point.

   Example:
   ```
   mount /dev/dsk/c3t130d0s0 /mnt
   ```

5. Change directory to the root partition mount point.

   Example:
   ```
   cd /mnt
   ```

6. Use the ufsdump utility to copy the root partition to the new boot disk.

   Example:
   ```
   ufsdump 0f - / | ufsrestore rf -
   ```

7. Enter: rm restoresymtable.

8. Install the boot block on the new boot disk.

   Example:
   ```
   installboot /usr/platform/`uname -i`/lib/fs/ufs/bootblk
   /dev/rdsk/c3t130d0s0
   ```

9. Edit the new vfstab file to properly mount the new partition(s) during boot. In this case each reference to `c0t0d0s0` would be changed to `c3t130d0s0`.

   Example:
   ```
   vi /mnt/etc/vfstab
   ```

10. Shutdown the system.

    Example:
    ```
    /sbin/init 0
    ```

11. Boot from the newly created boot disk.

    Example:
    ```
    boot /pci@1f,0/pci@1/QLGC,qla@4/sd@82,0
    ```

12. View the current dump device setting.

    Example:
    ```
    # dumpadm
    Dump content: kernel pages
    Dump device: /dev/dsk/c0t0d0s1 (swap)
    Savecore directory: /var/crash/saturn
    Savecore enabled: yes
    ```

13. Change the dump device to the swap area of the new boot drive.

    Example:
    ```
    # dumpadm -d /dev/dsk/c3t130d0s1
    ```

    NOTE: The following two steps set the newly created boot disk to be the default boot disk. These steps are performed at the system OBP (ok) prompt.

14. Create an alias entry for the new boot device (optional).

    Example:
    ```
    ok nvalias fibredisk /pci@1f,0/pci@1/QLGC,qla@4/sd@82,0
    ```

15. Set default boot device to be the new boot device (optional).

    Example:
    ```
    ok setenv boot-device fibredisk
    ```

13. Contacting QLogic

Please visit QLogic's website (http://www.QLogic.com). On this site you will find product information, our latest drivers, and links for technical assistance if needed.

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